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10/711,139	08/27/2004	Chi-Cheng Ju	MTKP0082USA	5138

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EXAMINER	
FINDLEY, CHRISTOPHER G	

ART UNIT	PAPER NUMBER
2621	

NOTIFICATION DATE	DELIVERY MODE
07/23/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/711,139	JU, CHI-CHENG	
	Examiner	Art Unit	
	CHRISTOPHER FINDLEY	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 May 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,5-8,10 and 14-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,5-8,10 and 14-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The Examiner notes that claim 26, which was added as a new claim in the RCE filed 11/12/2009, is not mentioned in Applicant's response to the last office action filed 5/04/2010. The Remarks section states that claims 1, 3, 5-8, 10, and 14-25 are pending, and claim 26 is not listed in the claims section. It is therefore assumed that claim 26 has been cancelled.

Response to Arguments

2. Applicant's arguments with respect to claims 1 and 10 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Diaz et al. (US 5812789 A) in view of Sun et al., MPEG Coding Performance Improvement by Jointly Optimizing Coding Mode Decisions and Rate Control; IEEE Transactions on Circuits and Systems for Video Technology, Vol. 7, No. 3, June 1997, pages 449-458 (hereinafter referred to as "Sun").

Re **claim 1**, Diaz discloses a video signal processing system for encoding an encoding bit stream according to characteristics of a decoding bit stream, the encoding and decoding bit streams include a plurality of encoding schemes comprising intra encoding, predictive encoding, and bidirectionally predictive encoding, the video signal processing system comprising: a storage device utilized for storing data of the decoding bit stream and the encoding bit stream (Diaz: Fig. 2, memory 50); a decoder electrically connected to the storage device for decoding bit streams (Diaz: Fig. 2, decoder 44); and an encoder electrically connected to the storage device (Diaz: Fig. 2, encoder 46).

Diaz does not explicitly disclose the encoder selecting at least one encoding scheme to encode the encoding bit stream according to a current encoding scheme for the decoder to decode the decoding bit stream such that the goal of limiting a maximum memory bandwidth required for encoding and decoding is reached. However, Sun discloses an MPEG coding performance improvement by jointly optimizing coding mode decisions and rate control, wherein for each mode considered the macroblock is coded based on the already determined mode of the preceeding macroblock, and a "best" mode is determined to be the mode which yields the smallest rate distortion characteristics (Sun: page 452, left column section B). Since both Diaz and Sun relate to optimizing data rates, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the optimized coding mode decisions of Sun with the system of Diaz in order to provide a system which is realistically capable of selecting an optimal coding mode in real-time (Sun: page 449, right column first full paragraph).

Re **claim 3**, Diaz discloses that when the current encoding scheme for the decoder to decode the decoding bit stream is bi-directional predictive encoding, the encoder prevents selecting bi-directional predictive encoding to encode the encoding bit stream to prevent bandwidth together used by the encoder and the decoder exceeds the maximum memory bandwidth (Diaz: column 10, lines 43-47, a memory access operation may be preempted when the burst length is too long).

Re **claim 5**, Diaz discloses that when the current encoding scheme for the decoder to decode the decoding bit stream is the intra encoding, the encoding scheme for the encoder to encode the encoding bit stream is one of the intra encoding, the predictive encoding, and the bidirectionally predictive encoding (Diaz: column 8, lines 19-29, MPEG inherently utilizes one of intra, predicted, or bidirectionally predicted coding modes).

Re **claim 6**, Diaz discloses that when the current encoding scheme for the decoder to decode the decoding bit stream is the predictive encoding, the encoding scheme for the encoder to encode the encoding bit stream is one of the intra encoding, and the predictive encoding (Diaz: column 8, lines 19-29, MPEG inherently utilizes one of intra, predicted, or bidirectionally predicted coding modes; column 3, lines 26-39, dropping frames to reduce required memory bandwidth).

Re **claim 7**, Diaz discloses that when the current encoding scheme for the decoder to decode the decoding bit stream is the bidirectionally predictive encoding, the encoding scheme for the encoder to encode the encoding bit stream is the intra encoding (Diaz: column 8, lines 19-29, MPEG inherently utilizes one of intra, predicted,

or bidirectionally predicted coding modes; column 3, lines 26-39, dropping frames to reduce required memory bandwidth).

Re **claim 8**, Diaz discloses that the storage device is a memory (Diaz: Fig. 2, memory 50), and the video signal processing system further comprises a memory interface for controlling access to the memory (Diaz: Fig. 2, memory interface 48).

Re **claim 10**, Diaz discloses a video signal encoding and decoding method for encoding an encoding bit stream according to characteristics of a decoding bit stream, the encoding and decoding bit streams include a plurality of encoding schemes comprising intra encoding, predictive encoding, and bidirectionally predictive encoding, the video signal encoding and decoding method comprising: (a) checking a current encoding scheme of the decoding bit stream to decide an encoding scheme for encoding the encoding bit stream (Diaz: column 8, lines 19-29, the decoder/encoder is capable of utilizing multiple coding standards; column 6, lines 32-38, the type of coding standard factors into bandwidth calculations; column 6, lines 12-13, the DMA engine may be an integrated part of the decoder/encoder).

Diaz discloses that intra coded images (I frames) do not require access to the stored images, so they use no memory bandwidth (column 7, lines 16-22) and some images are decoded based on previous images (P frames) and some images are decoded based previous and future images (B frames) (column 3, lines 26-39), wherein more memory bandwidth would be required for accessing two images as opposed to just one image, but Diaz does not specifically disclose (b) encoding the encoding bit stream using one of the plurality of encoding schemes such that the goal of limiting a

maximum memory bandwidth required for encoding and decoding is reached. However, Sun discloses an MPEG coding performance improvement by jointly optimizing coding mode decisions and rate control, wherein for each mode considered the macroblock is coded based on the already determined mode of the preceeding macroblock, and a "best" mode is determined to be the mode which yields the smallest rate distortion characteristics (Sun: page 452, left column section B). Since both Diaz and Sun relate to optimizing data rates, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the optimized coding mode decisions of Sun with the system of Diaz in order to provide a system which is realistically capable of selecting an optimal coding mode in real-time (Sun: page 449, right column first full paragraph).

Claim 14 has been analyzed and rejected with respect to claim 5 above.

Claim 15 has been analyzed and rejected with respect to claim 6 above.

Claim 16 has been analyzed and rejected with respect to claim 7 above.

Re **claim 17**, Diaz discloses that the decoding bit stream and the encoding bit stream are both accessed through the same memory interface circuit corresponding to a memory (Diaz: Fig. 2, decoder 44 and encoder 46 are both connected to memory 50 via the memory interface 48 and the DMA engine 52).

Re **claim 18**, Diaz discloses that the encoding bit Stream is an encoding bit stream corresponding to a picture (Diaz: Fig. 2, video decoding circuit 12 and video encoding circuit 62 process video data, which corresponds to sequences of pictures).

Re **claim 19**, Diaz discloses that the encoding bit stream is an encoding bit stream corresponding to a blockof a picture (Diaz: column 8, lines 19-29, MPEG inherently provides for processing video in blocks of pixels).

Re **claim 20**, Diaz discloses that the block is a macroblock (Diaz: column 8, lines 19-29, MPEG inherently provides for processing video in macrobl0cks of 16X16 pixels).

Claim 21 has been analyzed and rejected with respect to claim 5 above.

Re **claim 22**, Diaz discloses encoding the block according to the intra encoding when the encoding scheme of the picture is the intra encoding (Diaz: column 8, lines 19-29, MPEG inherently utilizes one of intra, predicted,.or bidirectionally predicted coding modes).

Re **claim 23**, the combined system of Diaz and Miyawaki discloses a majority of the features of claim 23, as discussed above in claim 21. Additionally, Diaz discloses encoding the block according to one of the intra encoding and the forward motion compensation encoding when the encoding scheme of the picture is the predictive encoding (Diaz: column 8, lines 19-29, MPEG inherently utilizes one of intra, predicted, or bidirectionally predicted coding modes).

Re **claim 24**, Diaz discloses encoding the block according to one of the intra encoding, the forward motion compensation encoding, the backward motion compensation encoding, and the bidirectional motion compensation encoding when the encoding scheme of the picture is the bidirectionally predictive encoding (Diaz: column 8, lines 19-29, MPEG inherently utilizes one of intra, predicted, or bidirectionally predicted coding modes).

Re **claim 25**, Diaz discloses encoding the block according to one of the forward motion compensation encoding, the backward motion compensation encoding, and the bidirectional motion compensation encoding when the encoding scheme of the picture is the bidirectionally predictive encoding (Diaz: column 8, lines 19-29, MPEG inherently utilizes one of intra, predicted, or bidirectionally predicted coding modes).

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

a. Memory management for an MPEG2 compliant decoder; Cheney et al. (US 5668599 A)

b. Methods and apparatus for processing luminance and chrominance image data; Pearlstein et al. (US 6385248 B1)

c. System and method for adaptive video processing with coordinated resource allocation; Rodriguez et al. (US 20020009149 A1)

d. Recording apparatus and coding apparatus; Fukuda et al. (US 6856759 B1)

e. Moving image encoding method and apparatus, and moving image decoding method and apparatus; Kato (US 6415055 B1)

f. Method controlling memory access operations by changing respective priorities thereof, based on a situation of the memory, and a system and an integrated circuit implementing the method; Miyawaki et al. (US 5752266 A)

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER FINDLEY whose telephone number is (571)270-1199. The examiner can normally be reached on Monday-Friday (8:30 AM-5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha D. Banks-Harold can be reached on 571-272-7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Marsha D. Banks-Harold/
Supervisory Patent Examiner, Art Unit 2621

/Christopher Findley/